

Basic SQL

PowerSchool Fall Conference
August 2 & 3, 2010

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Documents can be downloaded from
<http://public.me.com/wwiens>

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Agenda

- Relational Database Concepts
- The Basics of SQL
- Joining Tables
- Querying PowerViews
- Review

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Tuesday, August 3, 2010

Objectives

After this session, you will be able to:

- Describe the basic database structure of PowerSchool
- Use SQL to write basic queries with filters and simple joins of two tables

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PS Tables

PowerSchool is made up of many different tables.

- Stats (17)
- StoredGrades (31)
- StudentAttendanceSummary (200)
- StudentRace (201)
- Students (1)**
- StudentSchedulingResults (190)
- StudentTest (87)
- StudentTestScore (89)
- Sys_Sequence (180)
- TeacherDailyLoad (199)
- TeacherRace (202)
- Teachers (5)
- TermBins (33)
- Terms (13)
- Test (86)
- TestScore (88)
- Transportation (120)
- Truancies (42)
- UCols (35)
- UnschedStudSchedLink (143)
- UnschedTermDayPeriodSlot (142)
- UnscheduledRoom (150)
- UnscheduledStudent (141)
- UnscheduledTeacher (149)
- UTable (32)
- VirtualFieldsDef (122)
- VirtualTablesData (123)

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How to view the tables

DDE/DDA table view

ID	499
LastFirst	ALEXANDER, RYAN J.
Alert_DisciplineExpires	
Alert_GuardianExpires	0/0/0
Alert_MedicalExpires	0/0/0
Alert_OtherExpires	0/0/0
AllowWebAccess	0
Applic_Response_Recvd_Date	0/0/0
Applic_Submitted_Date	0/0/0
Balance1	0.00
Balance2	0.00
Balance3	0
Balance4	0
Building	
Bus_Route	
Bus_Stop	
CampusID	0
City	Hastings
ClassOf	2011
Cumulative_GPA	0
Cumulative_Pct	0

Data Dictionary

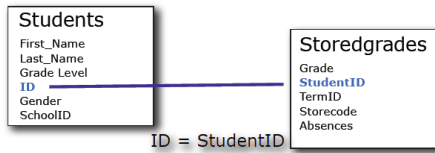
Students, 1 (ver3.6.1)
This table maintains Student demographics and other School related information such as Lunch ID, Grade Level and gender.

Column Name	Data Type	Description
Alert_Discipline (ver3.6.1)	Text	One of many various alerts in PowerSchool. This field stores the text description of the alert.
Alert_DisciplineExpires (ver3.6.1)	Date	One of many various alerts in PowerSchool. This field stores the expiration date tied to the alert.
Alert_Guardian (ver3.6.1)	Text	One of many various alerts in PowerSchool. This field stores the name of the guardian tied to the alert.
Alert_GuardianExpires (ver3.6.1)	Date	One of many various alerts in PowerSchool. This field stores the expiration date tied to the alert.
Alert_Medical (ver3.6.1)	Text	One of many various alerts in PowerSchool. This field stores the text description of the alert.
Alert_MedicalExpires (ver3.6.1)	Date	One of many various alerts in PowerSchool. This field stores the expiration date tied to the alert.
Alert_Other (ver3.6.1)	Text	One of many various alerts in PowerSchool. This field stores the text description of the alert.
Alert_OtherExpires (ver3.6.1)	Date	One of many various alerts in PowerSchool. This field stores the expiration date tied to the alert.
AllowWebAccess (ver3.6.1)	Integer	Whether to allow the parent user ID to log in to the parent/ot page: 1=Yes 0=No

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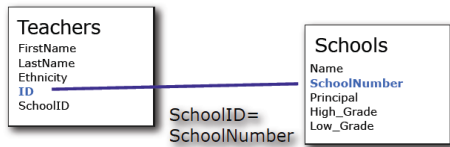
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Representing Relationships



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Another Example Representing Relationships



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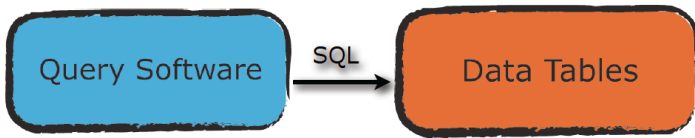
How do you talk to a database?

Query Software

Data Tables

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How do you talk to a database?



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Basic SQL Structure

- Get What?
- From Where?
- Special Instructions (filter)

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Basic SQL Structure

- Get What? Student names
- From Where?
- Special Instructions (filter)

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Basic SQL Structure

- Get What? Student names
- From Where? Students Table
- Special Instructions (filter)

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Basic SQL Structure

- Get What? Student names
- From Where? Students Table
- Special Instructions (filter) 9th graders only

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Basic SQL Code

Student names
Students Table
9th graders only

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Basic SQL Code

```
SELECT lastfirst
```

Student names

Students Table

9th graders only

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Basic SQL Code

```
SELECT lastfirst
```

Student names

```
FROM students
```

Students Table

9th graders only

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Basic SQL Code

```
SELECT lastfirst
```

Student names

```
FROM students
```

Students Table

```
WHERE grade_level=9
```

9th graders only

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Where does a lot

```
WHERE grade_level=9
```

Use WHERE to filter the search

- < > = <= => != NOT LIKE
- multiples with AND and OR

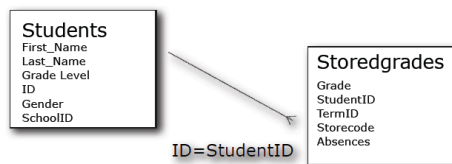
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YOUR TURN

Activity A

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What if one table is not enough?



Use table relationships to connect them

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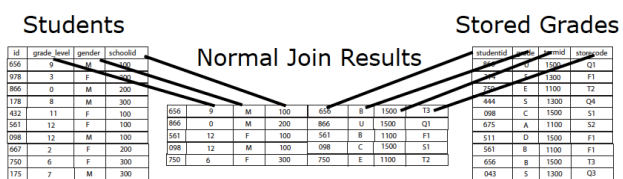
JOIN

Use JOIN statement to combine data from tables.

* "JOIN" and "INNER JOIN" statements are the same.

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How a JOIN works

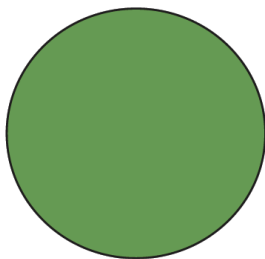


Match rows with linking data.

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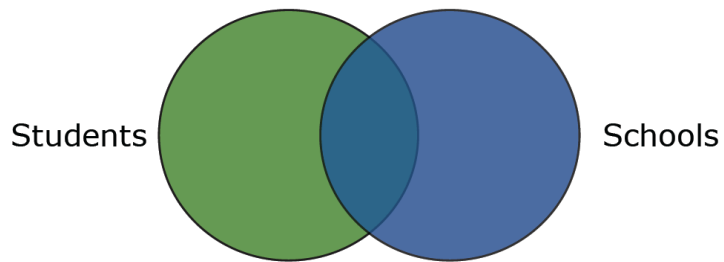
INNER JOIN

Students



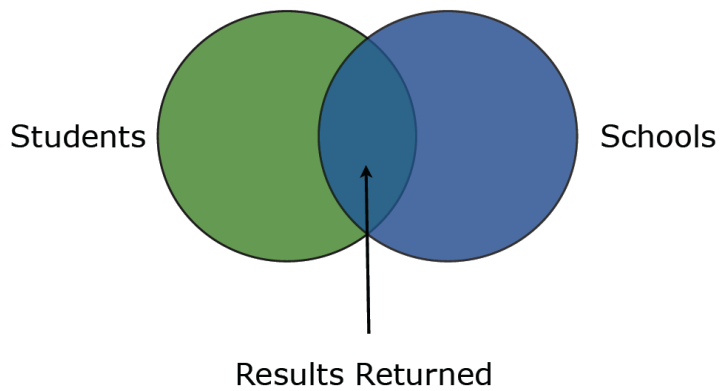
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INNER JOIN



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INNER JOIN



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How to write a JOIN

How would you query student name with store grades?

```
SELECT students.lastfirst,  
storedgrades.grade  
  
FROM students  
JOIN storedgrades  
  
ON students.id=storedgrades.studentid  
  
WHERE students.schoolid=100
```

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How to write a JOIN

```
SELECT students.lastfirst,  
storedgrades.grade
```

Specify which table the
fields come from:

```
FROM students  
JOIN storedgrades
```

Students table
& Stored Grades table

```
ON students.id=storedgrades.studentid
```

Specify how to match records

```
WHERE students.schoolid=100
```

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YOUR TURN

Activity B & C

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APPENDIX

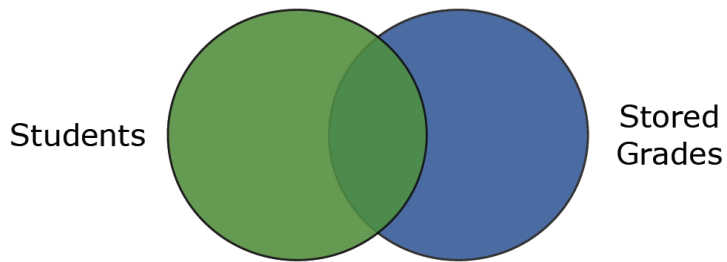
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There are also other JOINS

LEFT OUTER JOIN
RIGHT OUTER JOIN

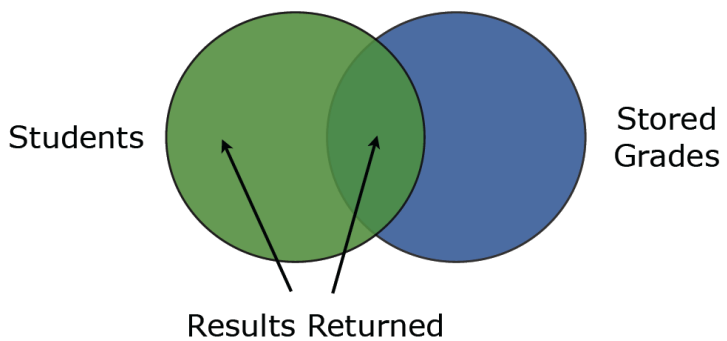
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LEFT OUTER JOIN



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LEFT OUTER JOIN



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How a LEFT OUTER JOIN works

Students

stid	grade_level	gender	schoolid
656	9	M	100
978	3	F	200
866	0	M	200
178	8	M	300
432	11	F	100
561	12	F	100
098	12	M	100
667	2	F	200
750	6	F	300
175	7	M	300

Stored Grades

studentid	grade	termid	storecode
866	U	1500	Q1
314	S	1300	F1
750	E	1100	T2
444	S	1300	Q4
098	C	1500	S1
675	A	1100	S2
511	D	1500	F1
561	B	1100	F1
656	B	1500	T3
043	S	1300	Q3

LEFT OUTER JOIN

656	9	M	100	656	B	1500	T3
978	3	F	200				
866	0	M	200	866	U	1500	Q1
178	8	M	300				
432	11	F	100				
561	12	F	100	561	B	1100	F1
098	12	M	100	098	C	1500	S1
667	2	F	200				
750	6	F	300	750	E	1100	T2
175	7	M	300				

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